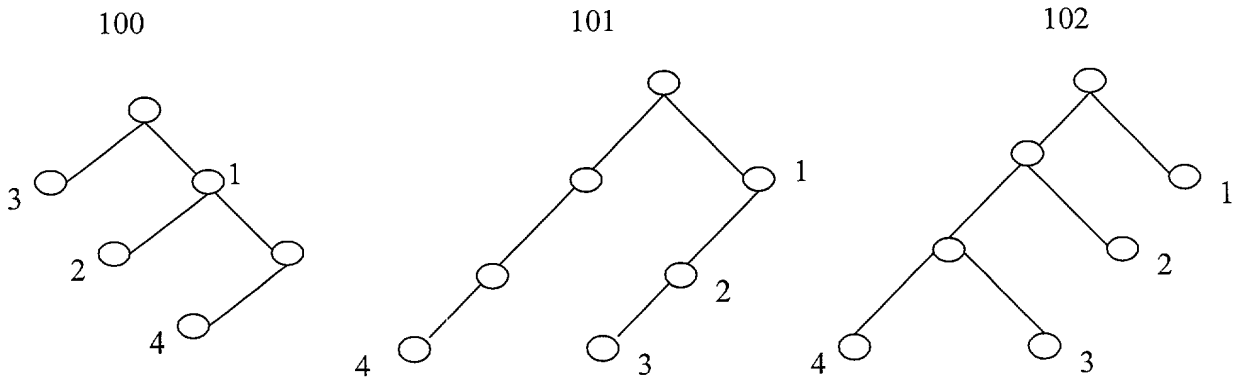


Figure 1

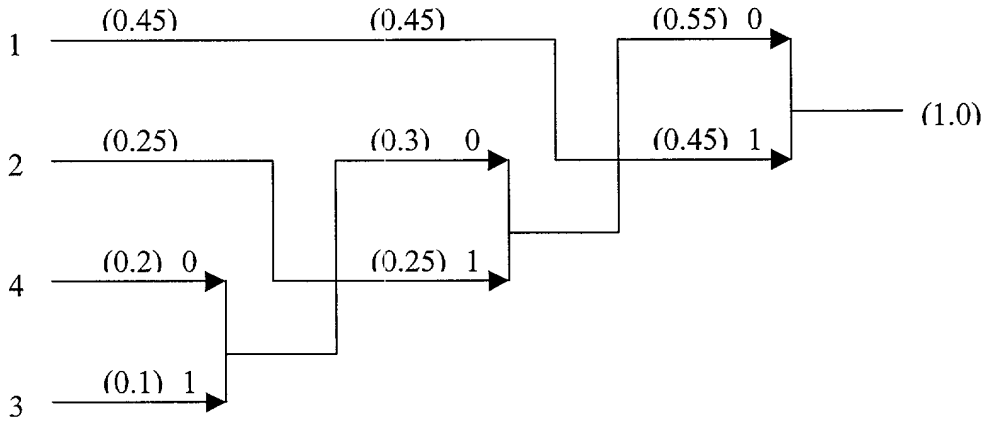


Figure 2A

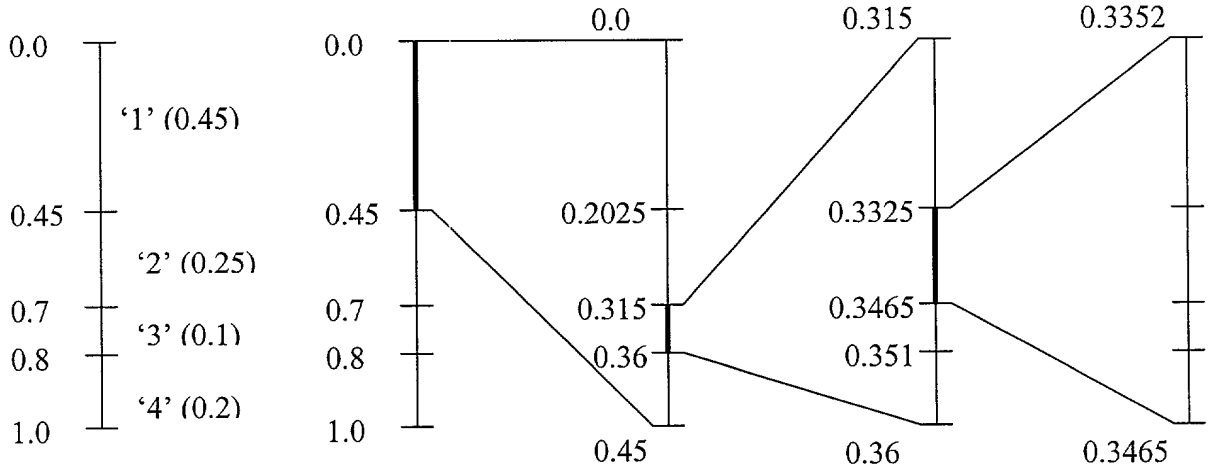


Figure 2B

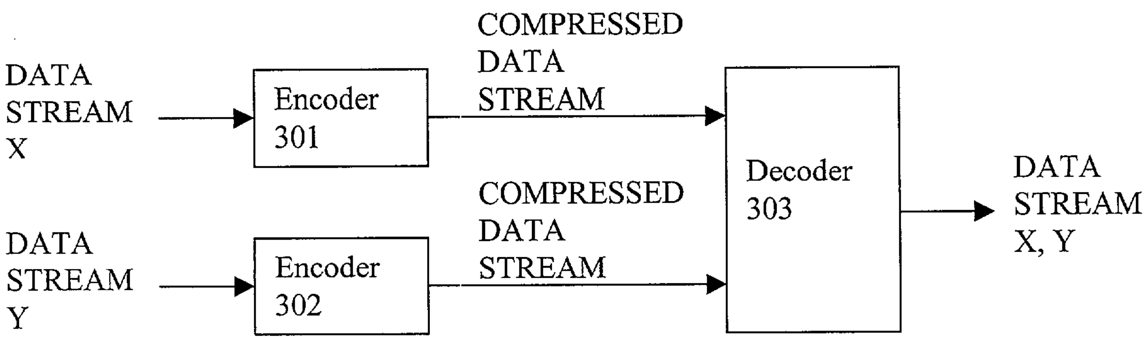


Figure 3A

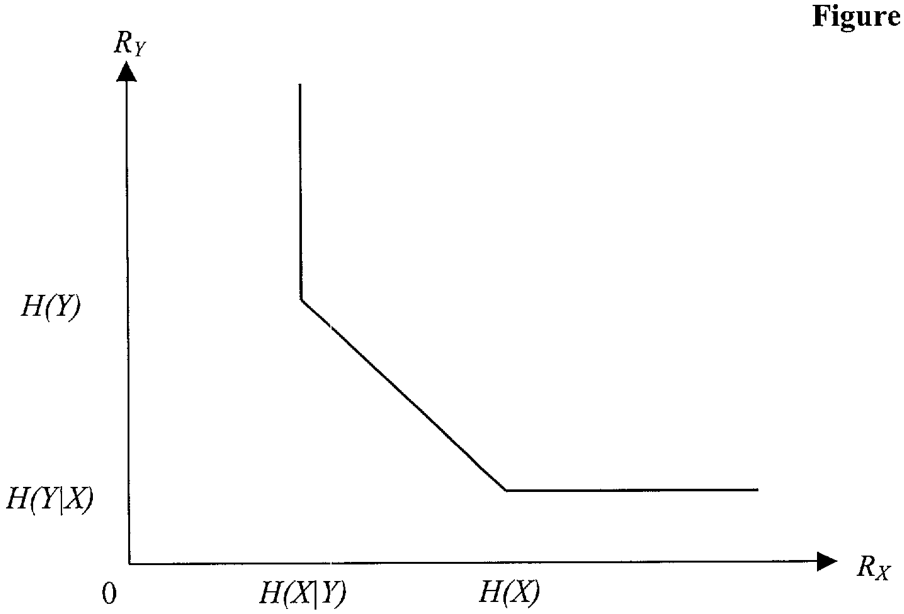
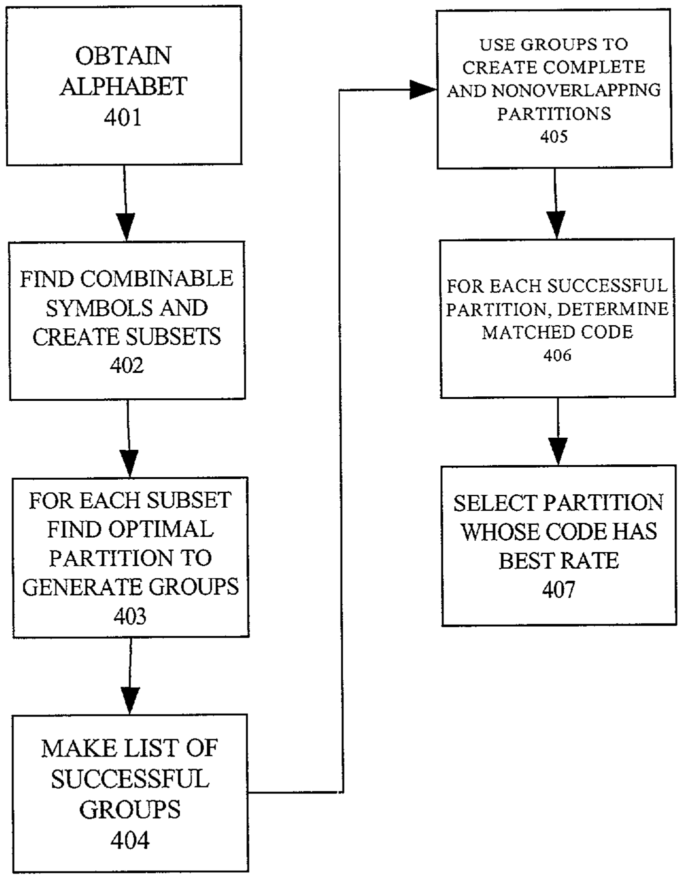


Figure 3B

FIGURE 4


OBTAIN ALPHABET 401
FIND COMBINABLE SYMBOLS AND CREATE SUBSETS 402
FOR EACH SUBSET FIND OPTIMAL PARTITION TO GENERATE GROUPS 403
MAKE LIST OF SUCCESSFUL GROUPS 404
USE GROUPS TO CREATE COMPLETE AND NONOVERLAPPING PARTITIONS 405
FOR EACH SUCCESSFUL PARTITION, DETERMINE MATCHED CODE 406
SELECT PARTITION WHOSE CODE HAS BEST RATE 407

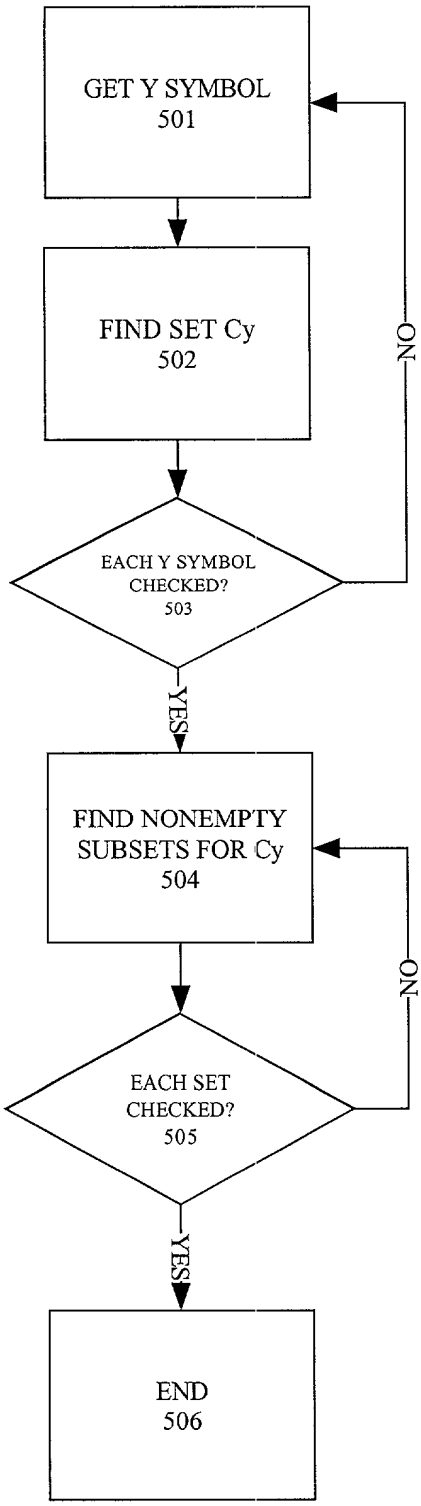

GET Y SYMBOL
501
FIND SET Cy
502
EACH Y SYMBOL
CHECKED?
503
NO
YES
FIND NONEMPTY
SUBSETS FOR Cy
504
EACH SET
CHECKED?
505
NO
YES
END
506

FIGURE 5

FIGURE 6

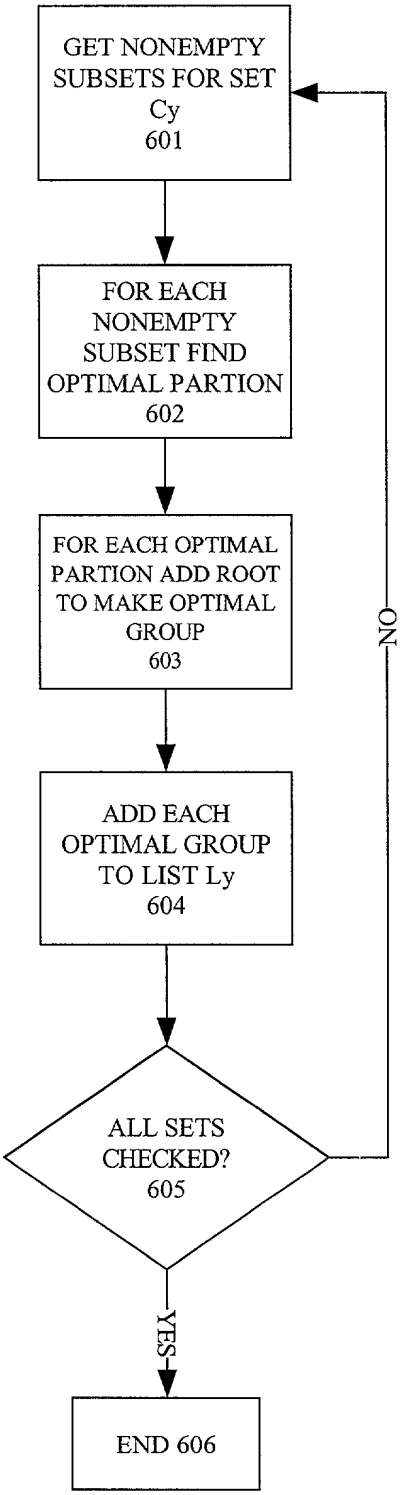
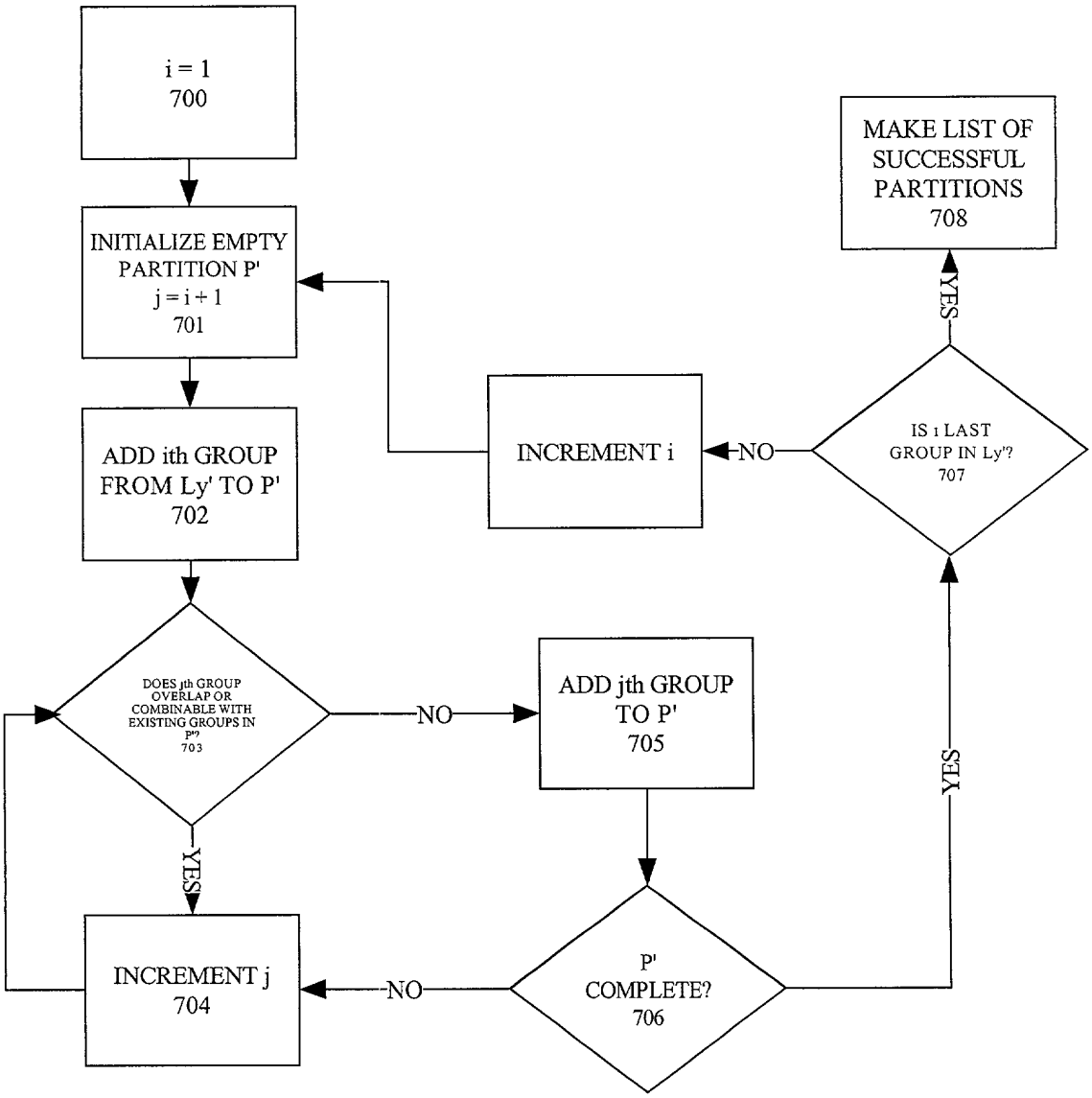

GET NONEMPTY SUBSETS FOR SET Cy 601
FOR EACH NONEMPTY SUBSET FIND OPTIMAL PARTION 602
FOR EACH OPTIMAL PARTION ADD ROOT TO MAKE OPTIMAL GROUP 603
ADD EACH OPTIMAL GROUP TO LIST Ly 604
ALL SETS CHECKED? 605
NO
YES
END 606

FIGURE 7


i = 1
700
INITIALIZE EMPTY PARTITION P'
j = i + 1
701
ADD ith GROUP FROM Ly' TO P'
702
DOES jth GROUP OVERLAP OR COMBINABLE WITH EXISTING GROUPS IN P"?
703
NO
ADD jth GROUP TO P'
705
YES
INCREMENT j
704
NO
P' COMPLETE?
706
YES
INCREMENT i
NO
IS i LAST GROUP IN Ly'?
707
YES
MAKE LIST OF SUCCESSFUL PARTITIONS
708

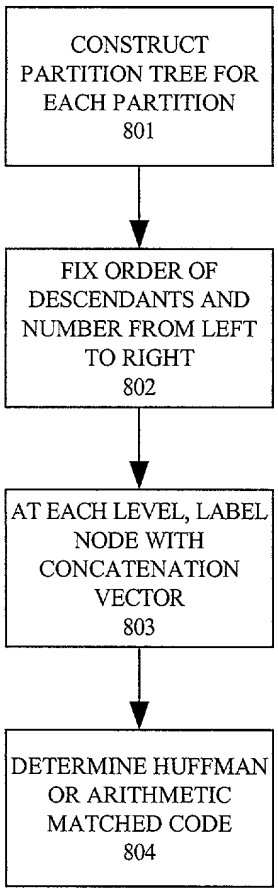

CONSTRUCT PARTITION TREE FOR EACH PARTITION
801
FIX ORDER OF DESCENDANTS AND NUMBER FROM LEFT TO RIGHT
802
AT EACH LEVEL, LABEL NODE WITH CONCATENATION VECTOR
803
DETERMINE HUFFMAN OR ARITHMETIC MATCHED CODE
804

FIGURE 8

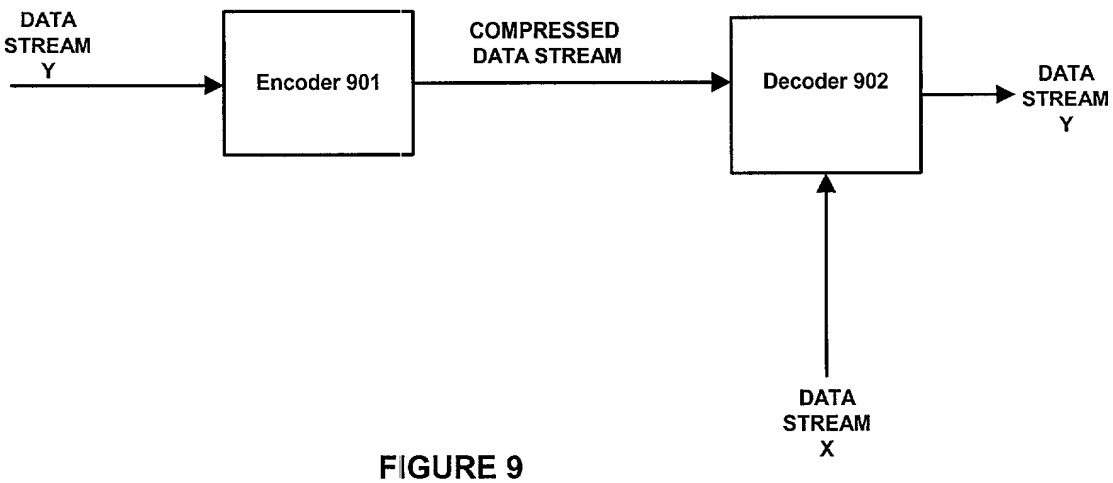

DATA
STREAM
Y
Encoder 901
COMPRESSED
DATA STREAM
Decoder 902
DATA
STREAM
Y
DATA
STREAM
X

FIGURE 9

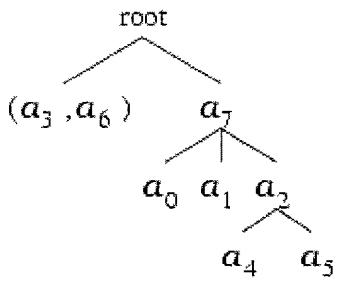


FIGURE 10A

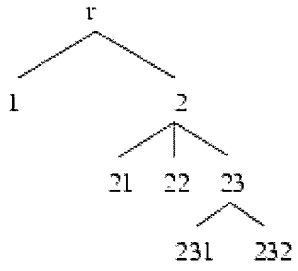


FIGURE 10B

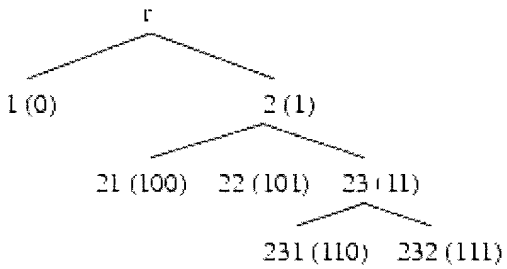


FIGURE 10C

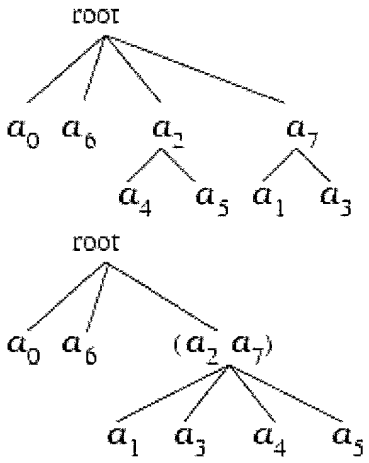


FIGURE 10D

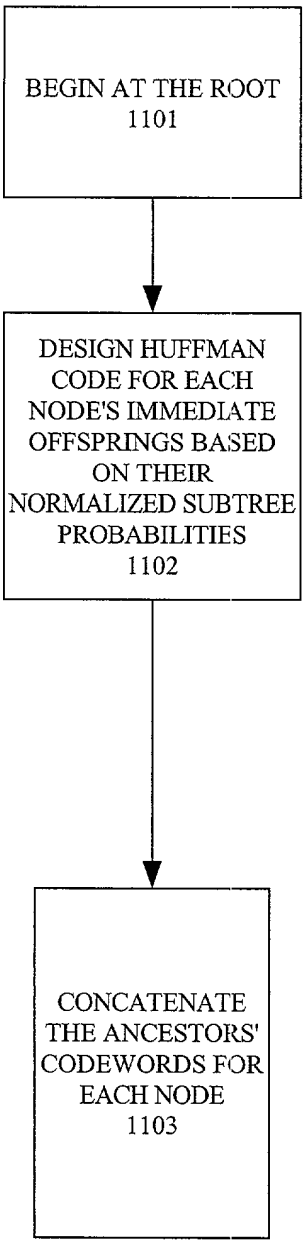

BEGIN AT THE ROOT
1101
DESIGN HUFFMAN CODE FOR EACH NODE'S IMMEDIATE OFFSPRINGS BASED ON THEIR NORMALIZED SUBTREE PROBABILITIES
1102
CONCATENATE THE ANCESTORS' CODEWORDS FOR EACH NODE
1103

FIGURE 11

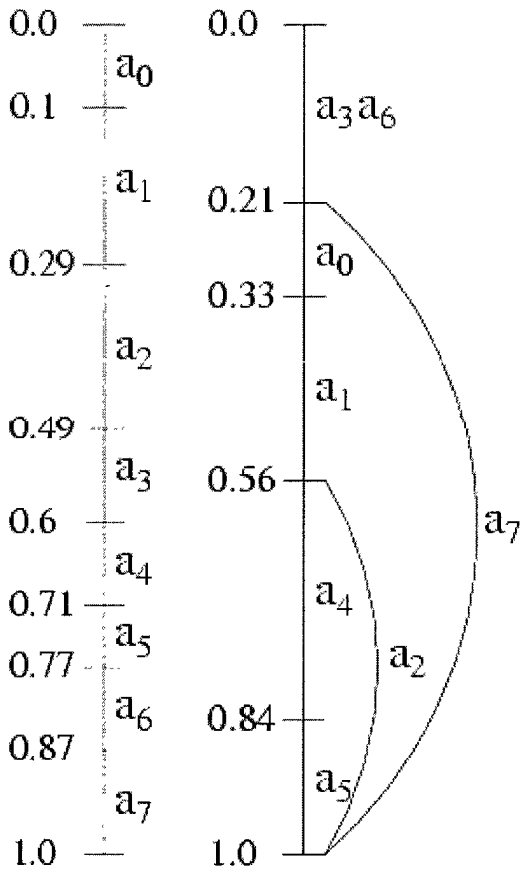


FIGURE 12A

FIGURE 12B

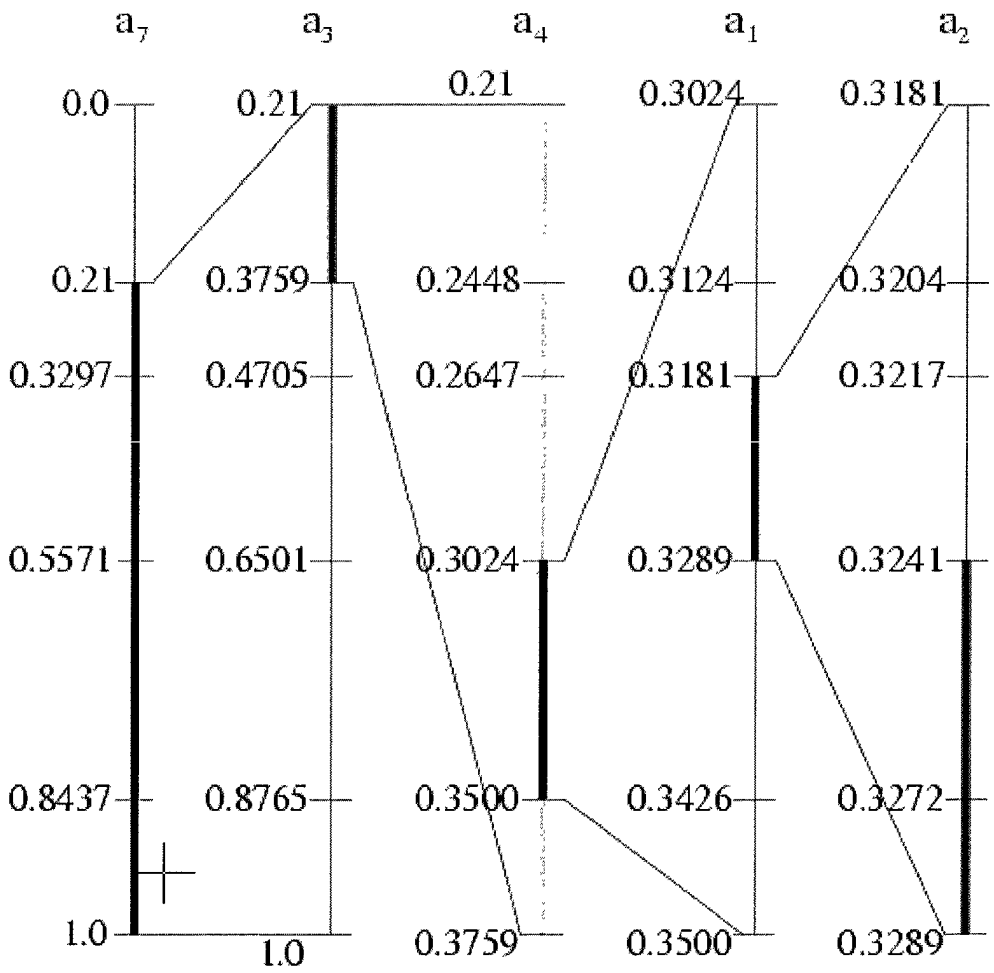


FIGURE 12C

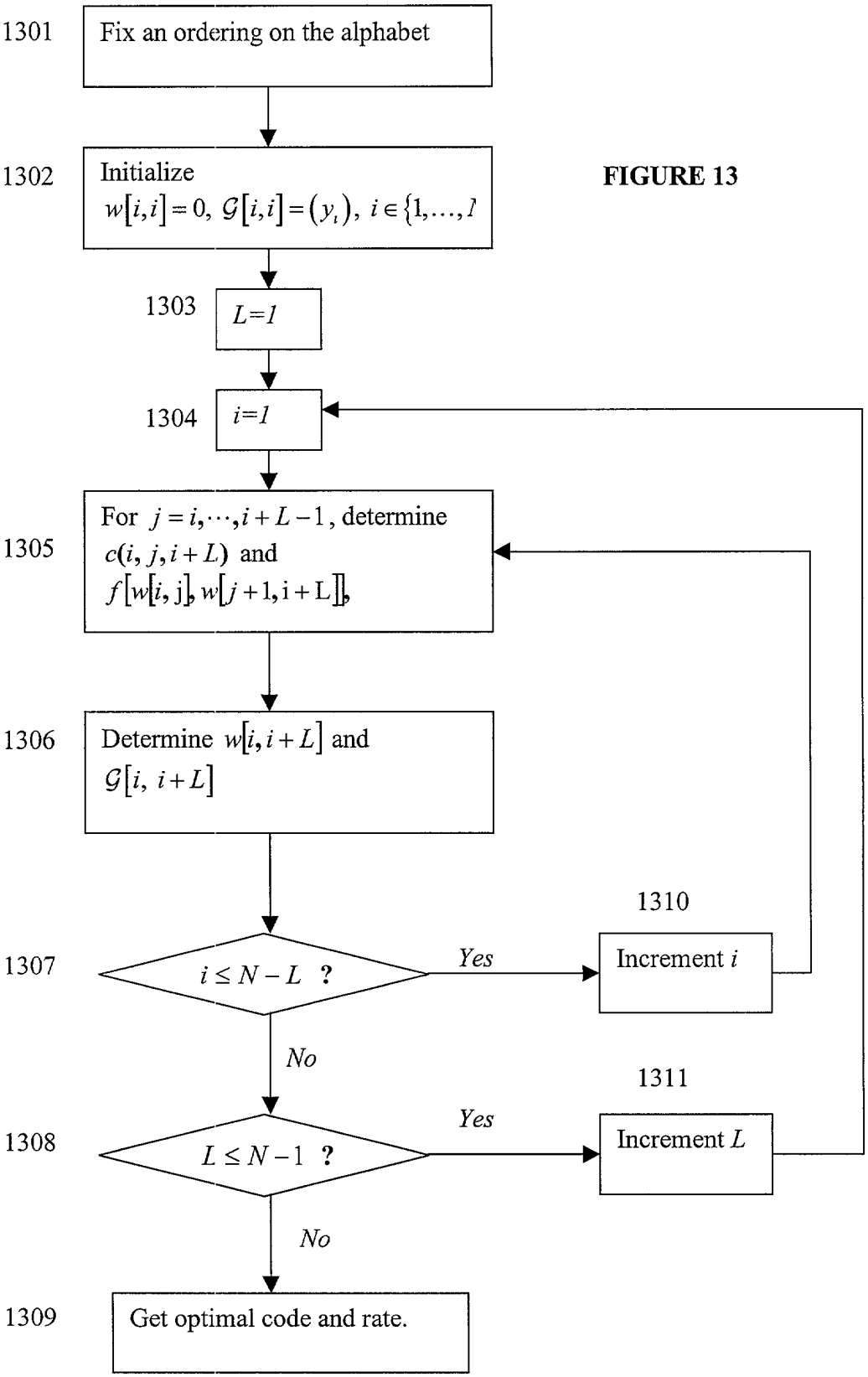
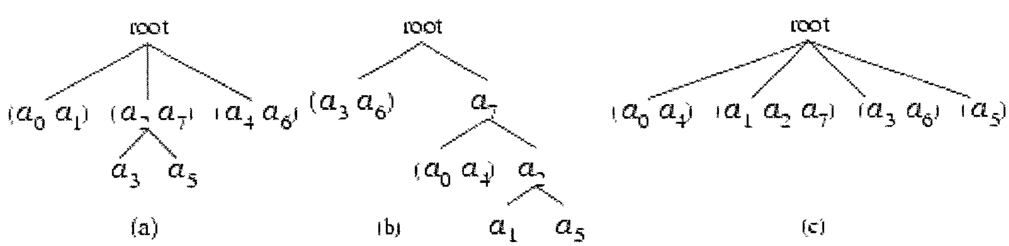

1301
Fix an ordering on the alphabet
1302
Initialize
$w[i,i]=0,\ \mathcal{G}[i,i]=(y_i),\ i\in\{1,\ldots,I$
1303
$L=1$
1304
$i=1$
1305
For $j=i,\cdots,i+L-1$, determine
$c(i,j,i+L)$ and
$f[w[i,j],w[j+1,i+L]]$
1306
Determine $w[i,i+L]$ and
$\mathcal{G}[i,\ i+L]$
1307
$i\le N-L$?
Yes
1310
Increment i
No
1308
$L\le N-1$?
Yes
1311
Increment L
No
1309
Get optimal code and rate.

FIGURE 13



Partition trees for (a) $R^*_{SI,H}(Y)$; (b) $R^*_{SI,A}(Y)$; (c) $R'_{SI,A}(Y)$ and $R'_{SI,H}(Y)$.

FIGURE 14

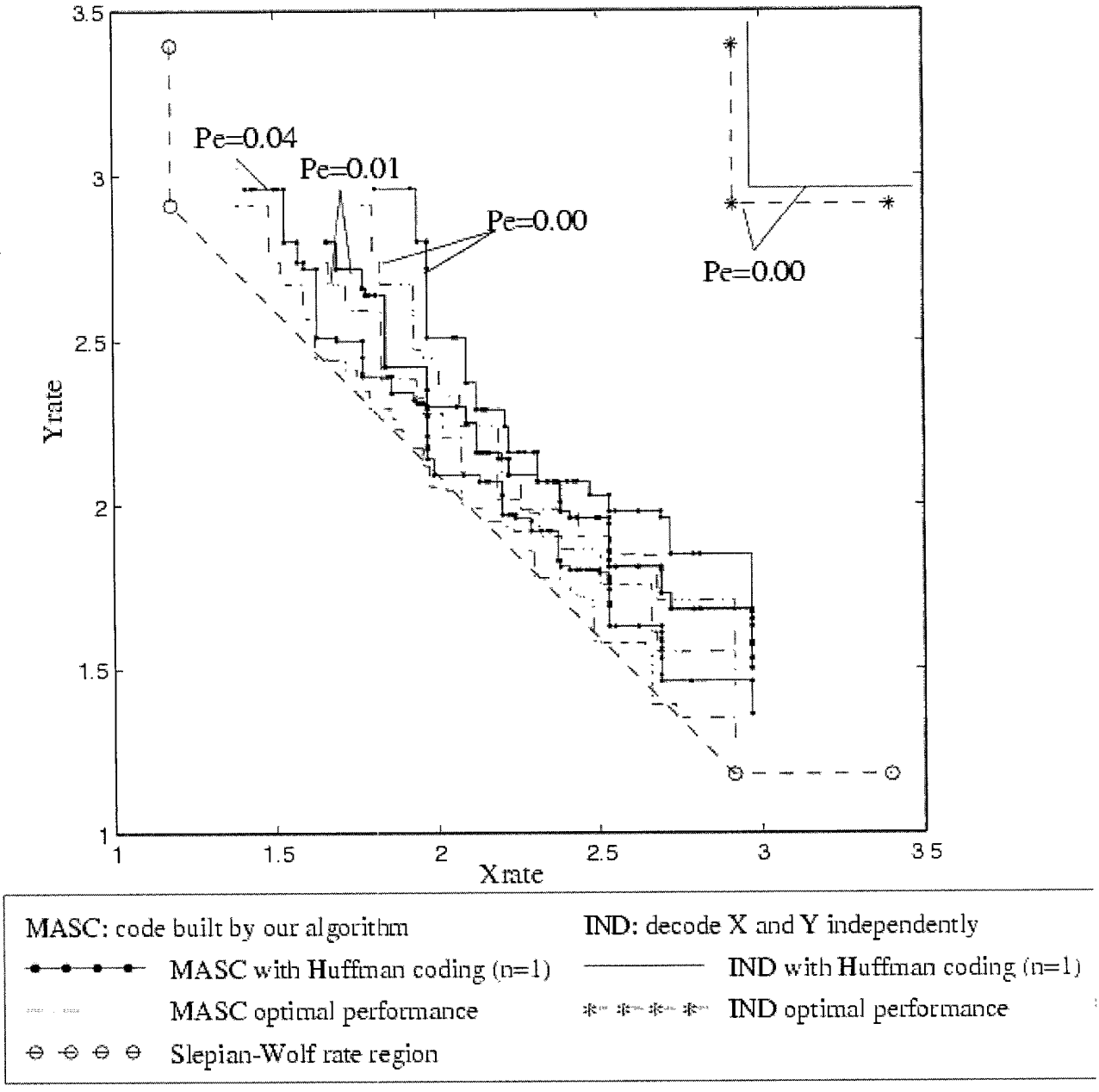


FIGURE 15 General lossless and near-lossless MASC results.

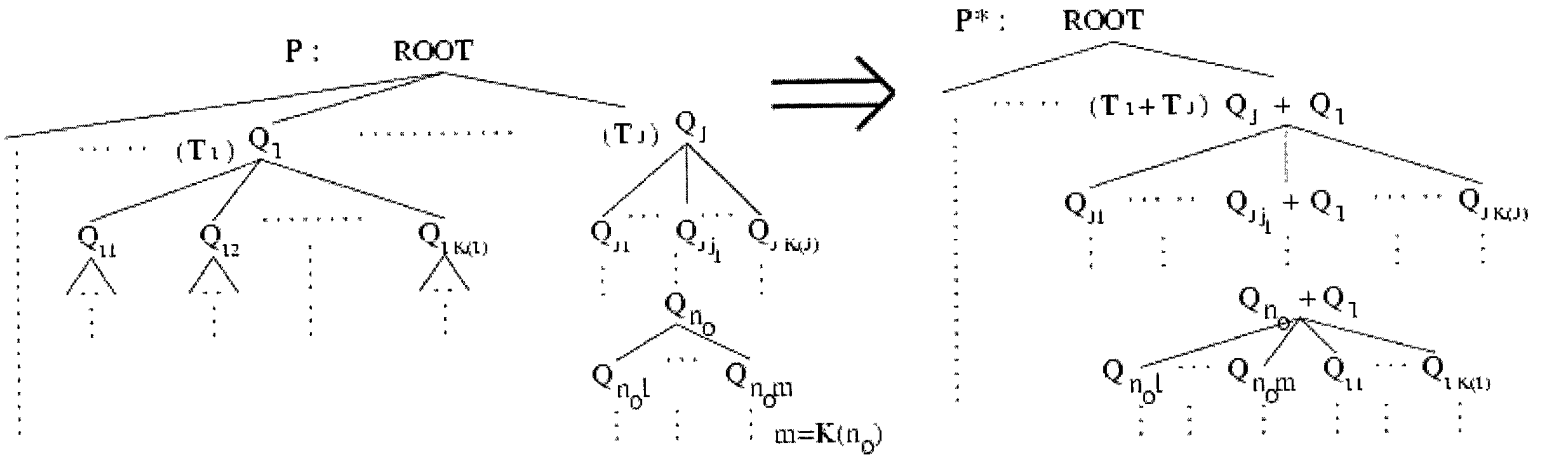

P : ROOT
(T1) Q1
(TJ) QJ
Q11
Q12
Q1K(1)
QJ1
QJj1
QJK(J)
Qno
Qnol
Qnom
m=K(no)
P* : ROOT
(T1+TJ) QJ + Q1
QJ1
QJj1 + Q1
QJK(J)
Qno + Q1
Qnol
Qnom
Q11
Q1K(1)

FIGURE 16

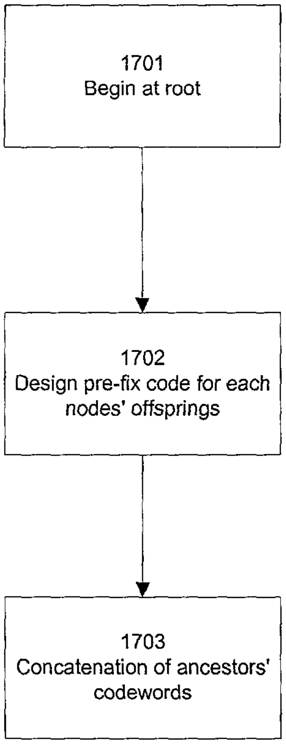


FIGURE 17

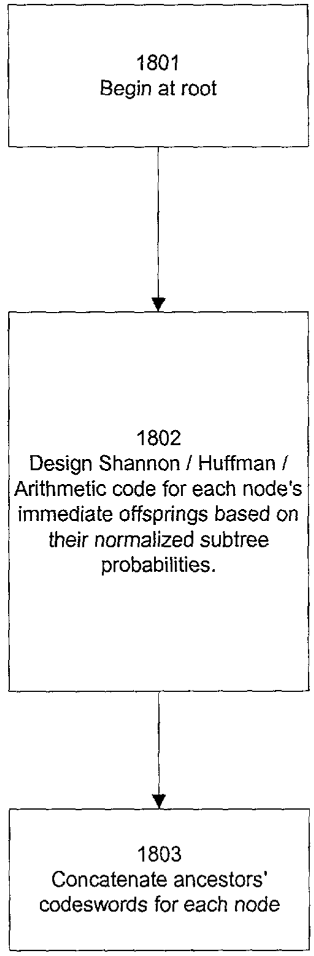


FIGURE 18